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NIKONOS Speedlight

SB-101

INSTRUCTION MANUAL

NOMENCLATURE

① Wide-Flash Adapter SW-101

② 1/4 index

③ AUTO/FULL index

④ ASA/ISO film speed scale

⑤ Automatic shooting range indicators

⑥ f/stop scale

⑦ Distance scale (in meters and feet)

⑧ Lockable ball-head

⑨ Flash head locking lever

⑩ Fish symbol

⑪ Cord fastning belt

⑫ Sync cord plug

⑬ Sensor Unit SU-101

⑭ Sensor cord plug

⑮ Sensor holder

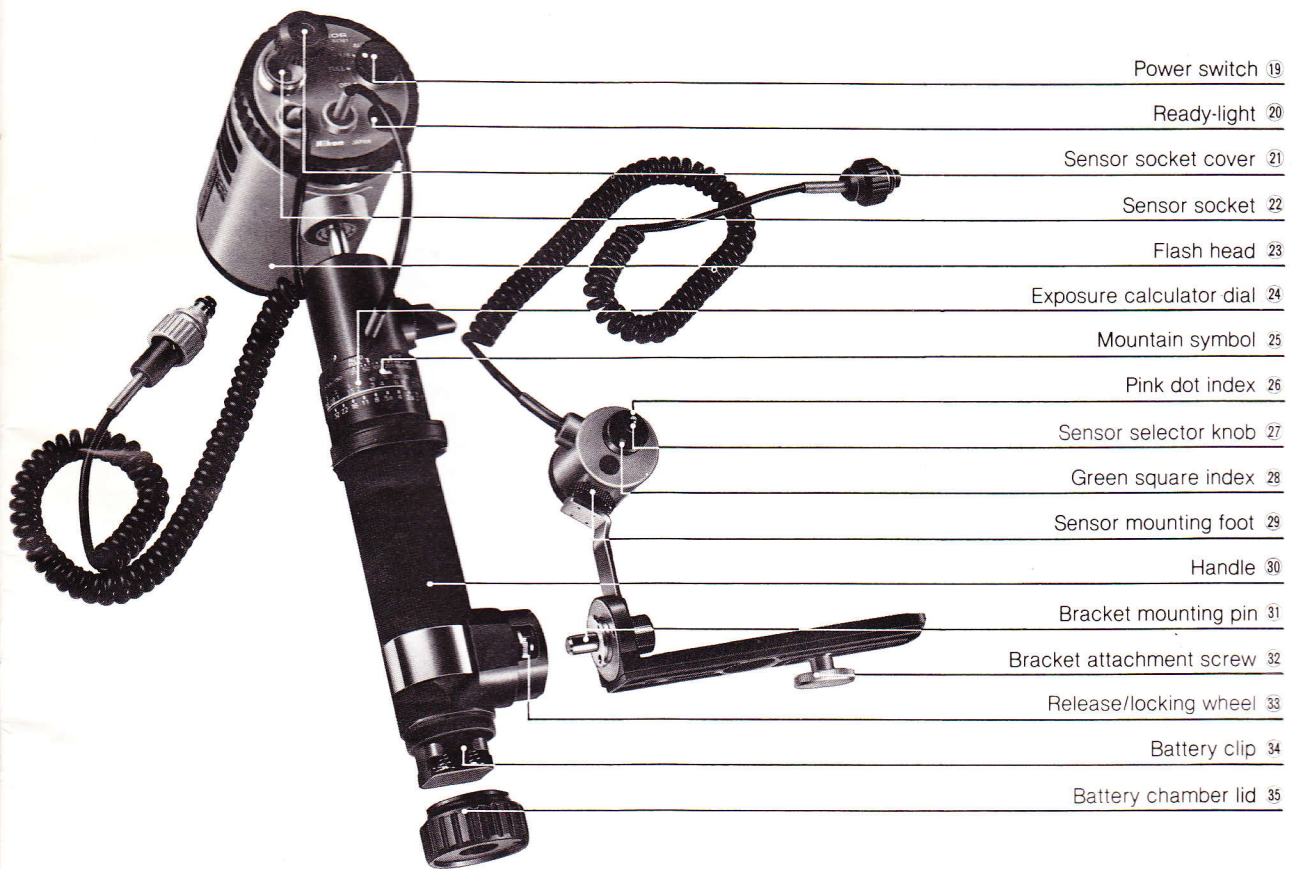
⑯ Bracket mounting adapter

⑰ Sensor holder locking screw

⑱ Bracket

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FOREWORD

The Nikonos Speedlight SB-101 is an underwater electronic flash unit offering fully automatic operation. Used with the Nikonos IV-A, the SB-101 can go down to depths of 50 meters (160 feet) and withstand pressures of 6kg/cm² (85 lb/in²). Thus you can use this speedlight in situations where regular speed lights would dare not go.

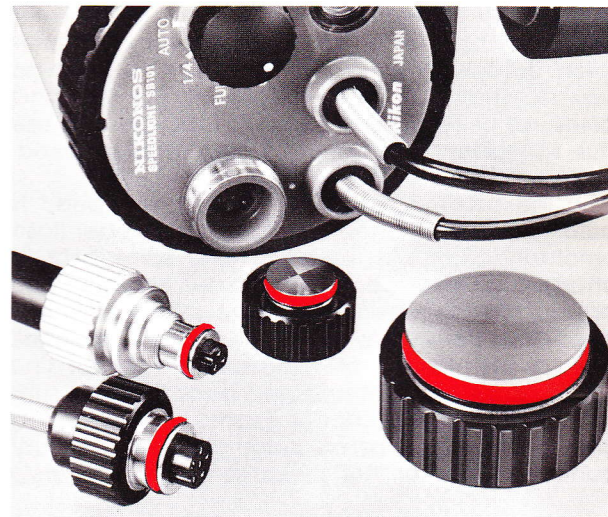
With the camera set to "A," the shutter speed is automatically switched to 1/90sec. for proper flash synchronization. As soon as the speedlight is charged up and ready to fire, a red lightning bolt appears in the viewfinder as the shutter button is depressed halfway to let you know when to shoot. Then at the instant of exposure, the Sensor Unit SU-101 reads the light reflected back from the subject to provide the correct exposure. You have a choice of two f/stops on automatic, plus manual control at "FULL" or "1/4" power settings.

To use the SB-101 with the Nikonos III, set the shutter speed dial to 1/60 sec. or slower. The speedlight offers fully automatic operation; however, the camera has no built-in ready-light.

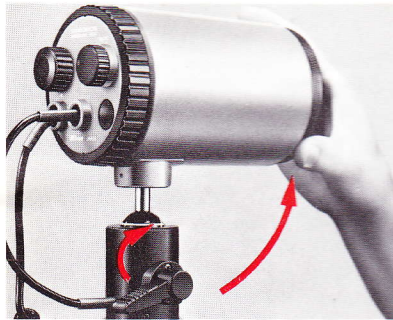
Even though this speedlight is extremely easy to use, you should still familiarize yourself with its preparation and basic operation as presented in the first two sections of this manual. For more detailed information, please refer to "CONTROLS IN DETAIL." A few minutes wisely invested now will pay off later in years of rewarding photographic experiences.

PREPARATION

Prior to using the Nikonos Speedlight SB-101, check to see that the O-rings are not scratched and that there is no sand or foreign matter attached to the rings. Then you must lubricate the O-rings (shown in red) using the tube of lubricant provided. Lubrication makes the parts easy to attach and protects the O-rings from excessive wear. Apply the lubricant sparingly, yet make sure there are no gaps between areas of application. It is recommended to apply lubricant whenever necessary to insure the longest possible service for the Nikonos Speedlight SB-101. Spare O-rings and lubricant are supplied with the speedlight.

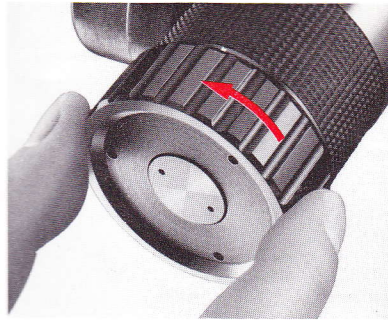


BASIC OPERATION



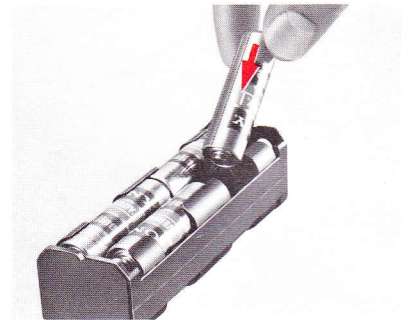
1. Rotate the flash head ²³ to the normal shooting position.

Rotate the head back so that the white line on the ball-head ⁸ is lined up with the top edge of the handle ³⁰. Turn the locking lever ⁹ clockwise to lock the head in place.



2. Open the battery chamber.

Unscrew the lid ³⁵ at the base of the handle and remove the battery clip ³⁴.

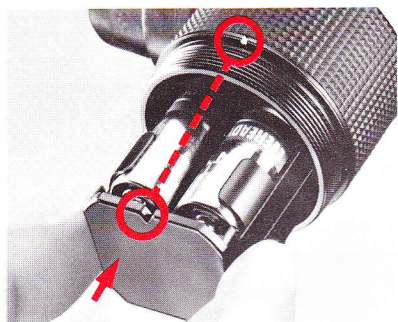


3. Load the batteries.

Insert eight AA-type penlight batteries following the + and - symbols on the inside of the clip.

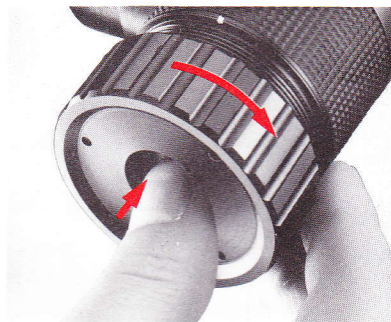
Note: Alkaline-manganese or NiCd batteries are recommended for use.

BASIC OPERATION—continued



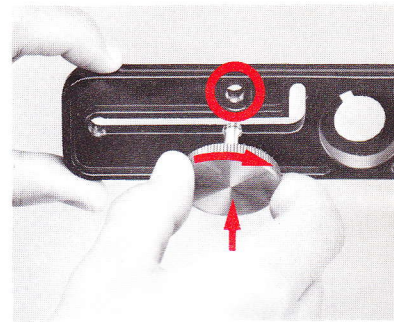
4. Install the battery clip.

Insert the battery clip into the battery chamber. Make sure the terminal end goes in first. Then line up the V-shaped notch on the end of the clip with the white dot on the rim of the battery chamber. Push the clip until it drops into the fully seated position.

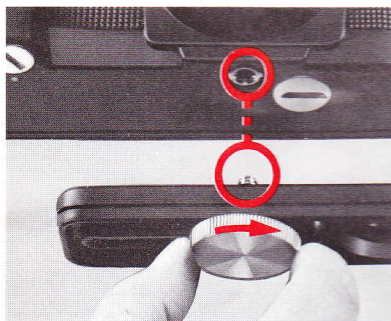


5. Close the battery chamber.

Use your thumb to push the center of the cover down until it fits tightly into place. Then screw the lid on completely.

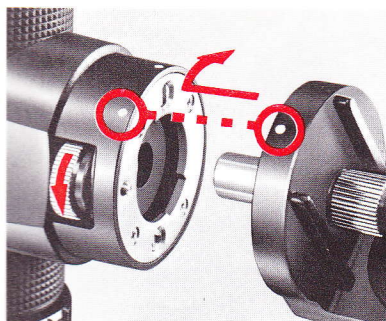


6. Insert the attachment screw ³² into the hole in the bracket ¹⁸.



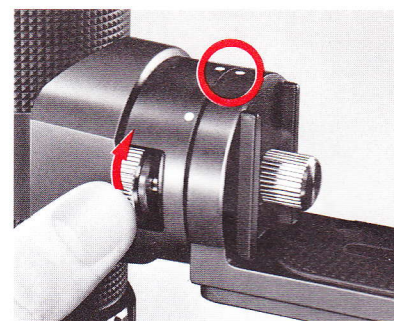
7. Attach the bracket to the camera.

Screw the bracket's attachment screw into the camera's tripod socket to secure the two units together tightly.

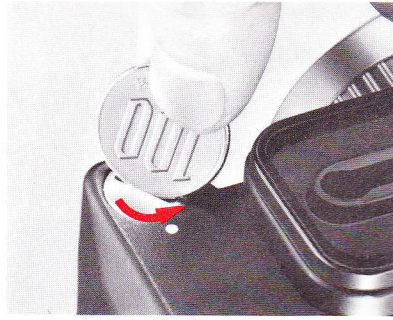


8. Attach the bracket to the speedlight.

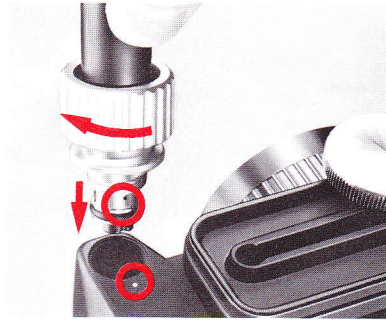
Turn the locking wheel ③ in the direction of the arrow until it goes to the extreme right. Then, insert the bracket mounting pin ③ into the hole in the bracket mounting adapter ① with the two dots aligned; rotate the camera forward so that it clicks and locks into place.



9. Tighten the locking wheel completely.

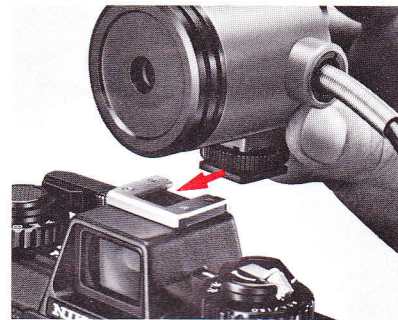


10. Remove the flash socket cover from the camera.



11. Insert the sync cord plug ¹² into the flash socket.

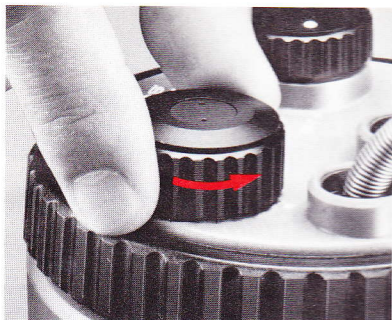
Line up the red dot on the plug with the white dot on the camera. Push the plug into the socket and screw the retaining ring tightly into place.



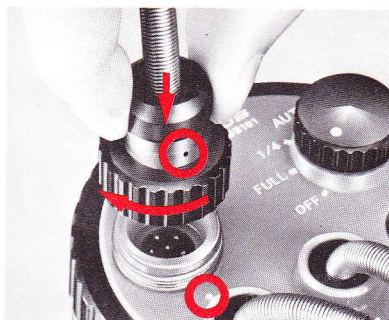
12. Attach the Sensor Unit SU-101 ¹³ to the accessory shoe.

Slip the sensor's mounting foot ²⁹ into the camera's accessory shoe and tighten the locking wheel.

***Note:** If using an optical viewfinder or a plastic frame finder, attach the sensor holder ¹⁵ to the bracket first. Then, attach the sensor to the sensor holder. For more details, refer to page 16.*

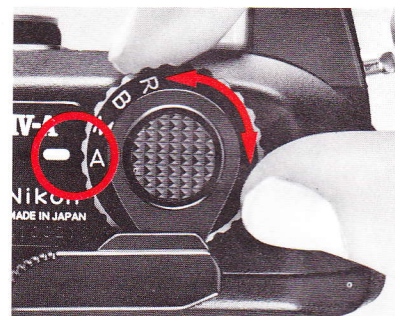


13. Unscrew the sensor socket cover ⑪.



14. Insert the sensor cord plug ⑫ into the sensor socket ⑬.

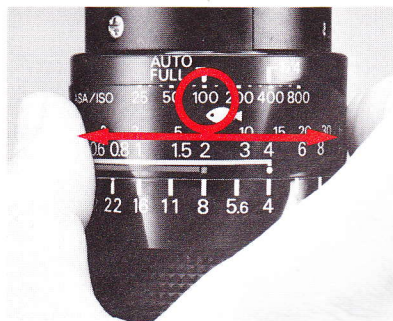
Line up the red dot on the plug with the white dot on the speedlight. Push the plug into the socket and screw the retaining ring tightly into place.



15. Set the camera's shutter speed dial to "A."

Note: The "M" setting also provides the correct synchronization shutter speed.

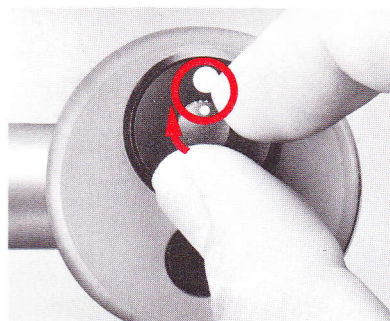
BASIC OPERATION—continued



16. Set the exposure calculator dial ²⁴.

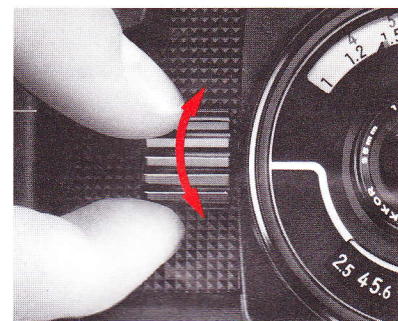
Rotate the dial until the speed of the film in use is opposite the AUTO/FULL index ³. The scale with the fish symbol ¹⁰ is for underwater shooting, while the mountain symbol ²⁵ indicates the one for use "on land." The pink and green lines indicate the automatic shooting range ⁶, whereas the small pink dot and the green square at the end of the lines indicate the two usable f/stops for automatic operation. For example, if you're using ASA/ISO 100 film underwater, you have a choice of f/4 or f/8 with shooting ranges of 0.6~4m (2~14 ft.) and 0.6~2m (2~7 ft.) respectively.

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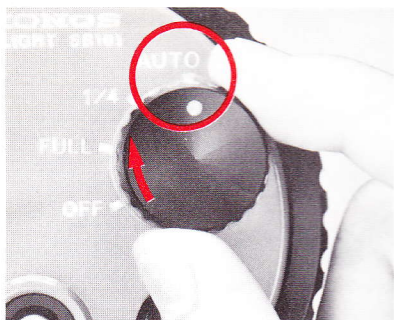


17. Set the sensor to the pink ²⁶ or green ²⁸ position.

Depending on the automatic shooting range and the f/stop you wish to use, turn the sensor's knob ²⁷ until the white dot is lined up with the pink dot or the green square.



18. Set the lens aperture to the appropriate f/number.



19. Turn on the speedlight.

Turn the power switch 19 until the white dot is opposite the AUTO index.

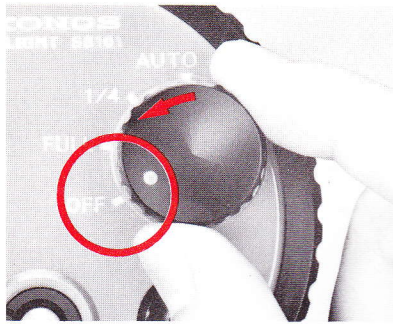


20. Depress the shutter release button halfway.

When the speedlight is charged up and ready to fire, a red lightning bolt will appear inside the viewfinder. The ready-light 20 on the back of the speedlight can also be used.



21. Take the picture.



22. Turn off the speedlight.

To conserve battery power between shooting sessions, return the power switch to the OFF position.

Note: When you turn the speedlight off, the camera reverts to automatic operation with the shutter speed dial left on "A."

CONTROLS IN DETAIL

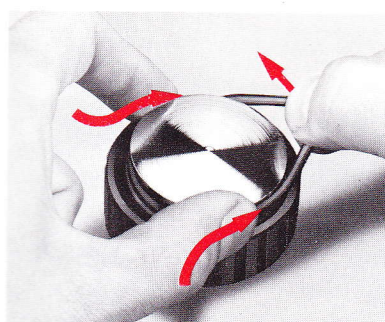
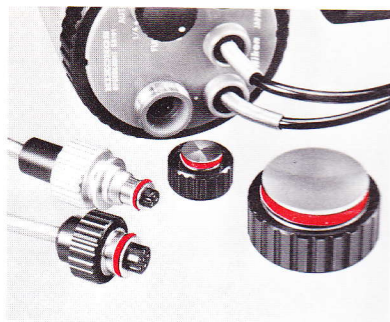


Fig. 1



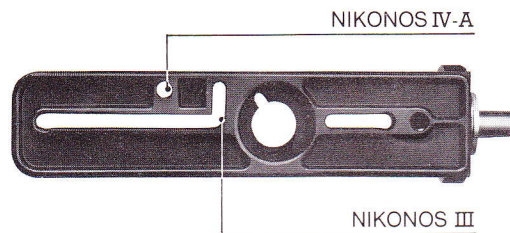
Fig. 2

O-Rings

The purpose of using O-rings on the Nikonos Speedlight is to seal all joints making the speedlight completely water-tight. As explained in the PREPARATION section, you should apply lubricant to the O-rings whenever necessary to insure smooth operation and long life. Please make sure to clean all sand and foreign matter off these parts. If you find a ring difficult to clean, remove it completely making certain not to scratch it. To insure watertightness, replace all O-rings when they become scratched or worn.

To remove an O-ring, grasp it between your thumb and forefinger. Pinch your fingers together as you slide them in the direction of the arrows to create slack in the O-ring. Then grasp the slack portion with your other hand and pull the ring off (Fig. 1).

To install a new O-ring, insert one side of the ring into the groove and hold it in position while rolling the other side of the ring into place (Fig. 2).

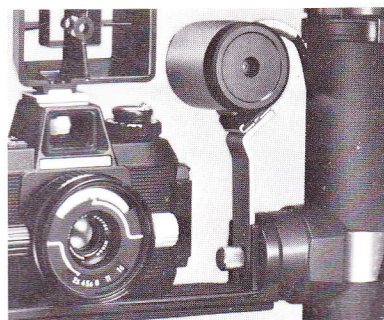


Bracket ⑱

The positions of the attachment screw for the Nikonos IV-A and III are indicated in the diagram.

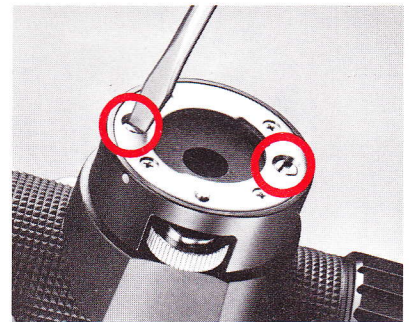
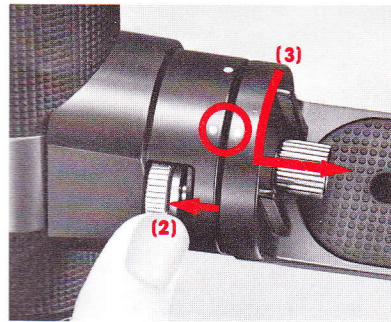
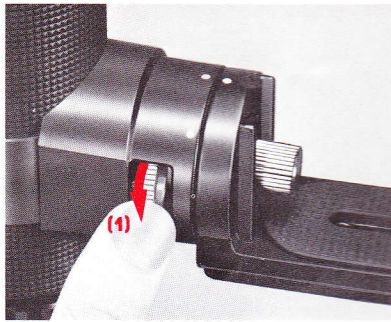
To reposition the attachment screw, first unscrew it; then screw it back into the hole or threaded end of the slot. Once screwed into the slot, the attachment screw can be moved freely to any position.

When using a plastic frame finder or an optical viewfinder on the camera, the special sensor holder allows attachment of the speedlight's Sensor Unit SU-101 to the bracket. To secure the holder to the bracket, slip the slotted end of the holder into the track with the washer on top and tighten the locking screw ⑰. Orient the holder's accessory shoe as shown in the picture.



Sensor Unit SU-101 attached to bracket via sensor holder.

Note: With the SB-101's bracket attached to the Nikonos IV-A, certain models of the optical finder for the UW-Nikkor 15mm f/2.8 cannot be attached. If this is the case, consult the Nikon dealer nearest you for the necessary modification.



Bracket Mounting Adapter ¹⁶

The release/locking wheel on the bracket mounting adapter allows the speedlight to be removed from the bracket for off-camera operation. To detach the speedlight, (1) loosen the release/locking wheel completely by turning it to the end of its travel; (2) push the locking wheel to the left to release the catch; (3) tip the camera backward until the two white dots are aligned, and pull the camera away from the speedlight.

Note: You can move the mounting adapter up and down on the handle to adjust the flash head height. To do this, loosen the two screws on the bracket mounting adapter, slide the adapter to the desired position, and then tighten the screws.

CONTROLS IN DETAIL—continued



Normal position

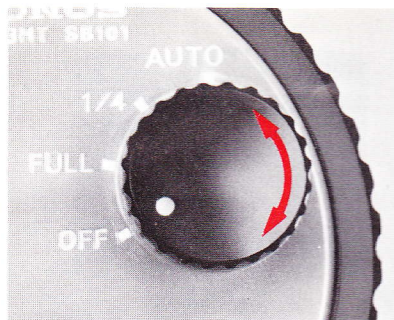


Close-up position

Flash Head ²³

Fully rotatable, the SB-101's flash head is attached to the handle via a lockable ball-head. Before moving the flash head, turn the locking lever counterclockwise to the unlocked position. Two white lines are inscribed on the ball-head: one indicates the normal position of the flash head for regular shooting; the other is a reference line for angling in the head when taking close-ups. With the appropriate white line even with the top edge of the handle, make sure the white index on the ball-head is also aligned with the white dot on the handle. After positioning the flash head,

turn the locking lever fully clockwise to prevent the head from moving during use. Of course, you can lock the head at any other position depending on your desired angle.



Power Switch ①9

Located on the back of the SB-101's flash head, the four-position power switch turns the speedlight on and off as well as sets the unit for automatic or manual operation.

"AUTO" position

At this setting, the speedlight's light output is automatically controlled by the Sensor Unit SU-101 to match the flash-to-subject distance. Refer to the "Exposure Calculator Dial" section for details on how to determine which f/stop to set on the lens.

"FULL" position

The power switch can be set to this position when you want to use the SB-101 in the manual mode at full power.

"1/4" position

At this setting, the speedlight's light output is reduced to one-fourth of its full value. Since this has the same effect as halving the guide number, it minimizes the possibility of overexposure when shooting close-ups.

"OFF" position

When the speedlight is not being used, always return the power switch to this position to conserve battery power.

CONTROLS IN DETAIL—continued



Fig. 1

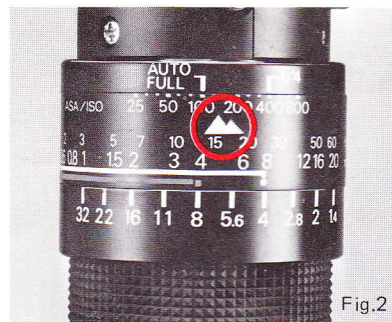
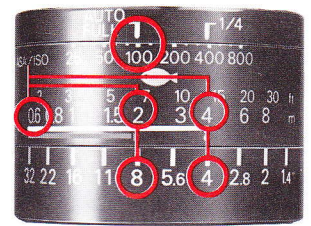


Fig. 2



Example 1

Exposure Calculator Dial 24

The band located near the top of the handle is the exposure calculator dial. The fish symbol indicates the scale to be used when shooting underwater (Fig. 1), while the mountain symbol shows the correct scale for "on land" use (Fig. 2). Their purpose is to help you select the usable range of f/stops for the speed of the film in use and the flash-to-subject distance.

For Automatic Operation

For any film speed, you have two f/numbers to choose from. Each of the f/numbers determines the maximum shooting distance for automatic exposure. The wider the aperture, the greater the maximum distance; the minimum distance remains 0.6m regardless of the f/number. If the flash-to-subject distance is the same, the wider the aperture you select, the faster the recycling time, but the less the depth of field in the final picture. Conversely, the

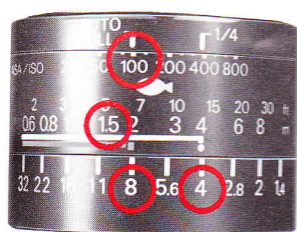
smaller the aperture, the deeper the depth of field, but the longer the recycling time. Therefore, in choosing an appropriate f/stop, you should take all these factors—maximum shooting distance, recycling time, and depth of field into consideration.

The following examples explain how to use the exposure calculator dial:

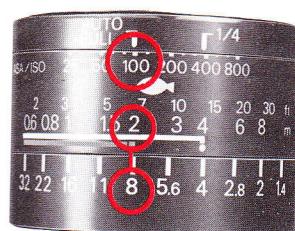
(Example 1)

If you're using ASA/ISO 100 film, you can shoot subjects underwater at distances from 0.6~4m (2~14 ft.) at f/4 and 0.6~2m (2~7 ft.) at f/8.

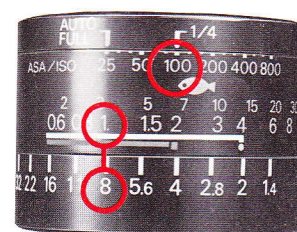
Note: At distances closer than approximately 1m, the SB-101's automatic exposure may not function properly, and overexposure might occur. In this situation, it is advisable to stop down the recommended aperture by one-half to one full f/stop or use the SB-101 on manual. Note that, however, the amount of the exposure compensation required depends on the circumstances and should be determined by trial and error.



Example 2



Example 3



Example 4

(Example 2)

With ASA/ISO 100 film and a subject 1.5 meters (5 feet) away, you can shoot at either $f/4$ or $f/8$. If a short recycling time is preferable, use $f/4$. If greater depth of field is desired, use $f/8$.

For Manual Operation

After turning the dial to align the ASA/ISO film speed with either the AUTO/FULL index or the 1/4 index①, simply read off the f /number which appears directly below the flash-to-subject distance; then set this f /stop on the aperture ring of the lens.

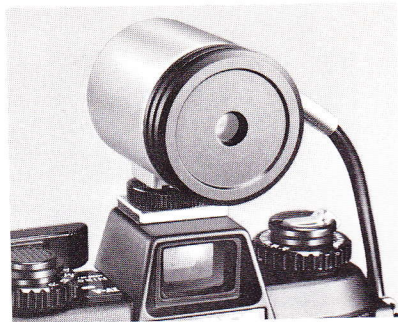
(Example 3)

At ASA/ISO 100 and full power underwater, if the subject is two meters (7 feet) away, you should set the aperture ring on your lens to $f/8$.

(Example 4)

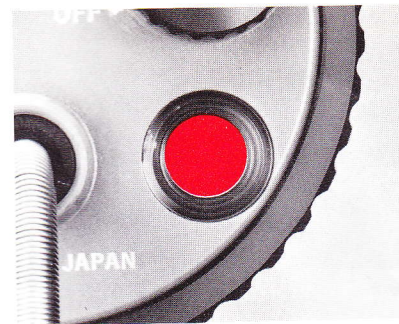
At ASA/ISO 100 and "1/4" power, if the subject is one meter (3 feet) away, you should set the aperture ring to $f/8$.

Note: For underwater use, the guide number of the speedlight is reduced by approx. one-half in comparison with the "on land" guide number. Depending on the visibility underwater, the maximum shooting distance on automatic may be less than that indicated on the exposure calculator dial. In addition, the recommended aperture for manual shooting may vary slightly. Therefore, use the calculator dial as a starting point in your tests for the correct exposure.



Sensor Unit SU-101 ⁽¹³⁾

With the power switch at the "AUTO" setting, the SB-101's Sensor Unit SU-101 reads the light reflected back from the subject while the speedlight is firing and tells the unit to turn itself off when the light output is sufficient for correct exposure. The two-position knob on the back of the sensor has pink dot and green square indexes. You must set the knob accordingly as explained in Step 16, "Basic Operation." To get the correct exposure, position the sensor as close to the lens as possible. Usually it is attached to the camera's accessory shoe. However, when using a plastic frame finder or an optical viewfinder on top of the camera, you can attach the sensor to the speedlight's bracket via the special sensor holder.



Ready-Light ⁽²⁰⁾

Built into the back of the SB-101's flash head is a red LED ready-light which glows as soon as the speedlight is recycled and ready to fire. A high-pitched tone emanates from the speedlight at the same time. In addition, with the shutter speed dial at "A," a red LED ready-light in the form of a lightning bolt glows inside the viewfinder as the shutter release button is depressed halfway. Thus, you can tell when the flash is ready to fire without removing your eye from the viewfinder.

When you set the shutter speed dial to either M or B, the lightning bolt will appear as soon as the unit is recycled even though the shutter button has not been depressed.

Note: The red lightning bolt doesn't appear until the frame counter reaches "1" even if you depress the shutter button halfway.



Cord Fastening Belt ①

This belt can be used to secure both the sync cord and the sensor cord to the speedlight's handle to keep them out of the way while shooting.



Wide-Flash Adapter SW-101 ①

The Wide-Flash Adapter attached on the SB-101's flash head increases illumination from 66° to 79° for just the right amount of coverage when a 28mm wideangle lens is used.

To attach the adapter, unscrew the locking ring and push the assembly of the adapter/locking ring over the SB-101's flash head as far as it will go. Then tighten the adapter by screwing the locking ring to prevent the adapter from accidentally slipping off the flash head.

With the SW-101 attached, the SB-101's guide number is reduced on land from 32 to 22 at full power or from 16 to 11 at 1/4 power. Underwater, it is reduced from approx. 16 to approx. 11 at full power or from approx. 8 to approx. 5.5 at 1/4 power.

Note: If the locking ring has slipped off the adapter, reattach it to the adapter with the square marks around the ring facing outward.

ACCESSORY

Speedlight Case SS-101

Three cushioned compartments inside this stylish tote bag house all parts of the Nikonos Speedlight SB-101, including the camera. The SS-101 is also available as a replacement.



FLASH SHOOTING TIPS

When using the Nikonos IV-A on Auto in conjunction with the Speedlight SB-101, the shutter speed is automatically set to 1/90 sec. Therefore, when shooting fill-in flash in brightly lit shallow waters, the scene brightness may exceed the exposure value determined by the combination of automatically set 1/90 sec. and the aperture required by the flash, thus resulting in overexposure. To obtain proper flash exposure, make sure the flash becomes the main light source. To do so, follow this procedure:

1. First, take a meter reading of the natural light. Turn *off* the flash and be sure the shutter speed dial of the Nikonos IV-A is set at A.
2. Frame the scene in the viewfinder. Then, *slowly* stop down the lens by turning the lens aperture knob until the LED in the viewfinder first begins to blink. The blinking indicates that the shutter speed is approx. 1/30 sec. at that particular f/stop. Now, you know the level of illumination of the natural light.
3. Next, open up the lens one f/stop from the previous setting. In so doing, you automatically change the shutter speed to approx. 1/60 sec.—1/2 step below the 1/90 sec. automatic synchronization speed which the camera will revert to when using flash on Auto.
4. Now, read off the aperture set on the lens and compare it with the two aperture choices you have on the flash.
5. If at least one of the aperture settings required by the flash is smaller than that set on the lens, then the flash will be the main light source. Therefore, reset the lens to this aperture and make sure the Sensor Unit SU-101 is set to the appropriate green or pink dot.
6. If both apertures recommended by the flash are wider than that set on the lens, then the natural light will be the main source of illumination and overexposure may result. In this case, turn off the SB-101 and shoot by available light with the camera on Auto.

ACCESSORY

Speedlight Case SS-101

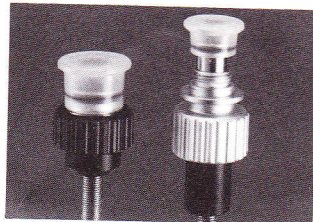
Three cushioned compartments inside this stylish tote bag house all parts of the Nikonos Speedlight SB-101, including the camera. The SS-101 is also available as a replacement.



TIPS ON SPEEDLIGHT CARE

1. After using the speedlight and camera in salt water, rinse both together, as soon as possible, in fresh running water with the sync and sensor cords attached. Finally, without detaching the units, dry both with a soft, dry cloth.

If you need to wash them separately, use the caps provided for the sync and sensor cord plugs and screw the cover onto the camera's flash socket to prevent them from getting wet. Be especially careful to clean the following parts of the speedlight: the ball-head, the ball-head locking lever, and the bracket's camera attachment screw and sensor attachment screw. If possible, soak the above parts in water all night, then rinse them in fresh running water again. The longer they are in water, the more effective the washing will be. This will prevent salt deposits on these parts from causing corrosion. Then, dry with a soft, dry cloth.



2. Never submerge the speedlight in water with the sensor socket cover removed. Also do not get the sync or sensor cord plugs wet.
3. Keep the speedlight away from places where the temperature might go above 60°C (140°F), such as on the beach or in the trunk of a car during the summer.
4. When you change batteries, first wash the battery chamber cover with fresh water and then dry it with a soft, dry cloth.
5. Never pick up or suspend the speedlight by the sync or sensor cords.
6. If you don't plan to use the speedlight for more than one month, remove the batteries to prevent possible battery leakage. Be especially careful when using alkaline-manganese batteries. If leakage does occur, gas will be trapped inside the air-tight battery chamber of the SB-101, possibly causing an explosion.
7. Never attempt to disassemble or service the speedlight yourself, especially the flash head, because of the danger of electric shock. If you have trouble with the unit, contact your dealer or the authorized Nikon service facility nearest you.

SPECIFICATIONS

Light output control

Automatic: silicon controlled rectifier (thyristor) and series circuitry using Sensor Unit SU-101

Manual: full and 1/4 power settings

Guide number (ASA/ISO 100 and meters)

	On land		Underwater	
	Full power	1/4 power	Full power	1/4 power
Normal	32	16	approx. 16	approx. 8
With SW-101	22	11	approx. 11	approx. 5.5

Angle of coverage

	On land	Underwater	Usable lens
Normal	66°	approx. 50°	35mm or longer
With SW-101	79°	approx. 59°	28mm or longer

Automatic shooting range

Sensor selector	ASA/ISO film speed						Auto shooting range (m)			
	25	50	100	200	400	800	Normal		With SW-101	
	f/number						On land	Underwater*	On land	Underwater*
O-shaped pink index	—	2.8	4	5.6	8	11	0.6~8	0.6~4	0.6~5.5	0.6~2.7
□-shaped green index	4	5.6	8	11	16	22	0.6~4	0.6~2	0.6~2.7	0.6~1.3

*The ranges shown in this table should be regarded only as a guide as they may differ depending on water quality and visibility.

ASA/ISO film speed range

ASA/ISO 25 to 800

Recycling time

Automatic: variable according to shooting distance; Manual: approx. 8 sec. with fresh set of alkaline-manganese batteries

Number of flashes Automatic: variable according to shooting distance; Manual: approx. 150 at full power with fresh set of alkaline-manganese batteries

Power Source Ready-light

Eight 1.5V AA-type penlight batteries Provided on back of speedlight; glows as soon as the unit is recycled and ready to fire

Mounting Dimensions Weight

Bracket-type
403mm(H) × 94mm(W) × 157mm(D)
Approx. 1900g (without batteries)

Supplied with Sensor Unit SU-101, bracket, Wide-Flash Adapter SW-101, sensor holder, battery clip, O-ring set in Speedlight Case SS-101 and caps for sync and sensor cord plugs. Withstands pressures up to 6kg/cm² (85 lb/in²) at depths down to 50m (160 ft).



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